

TITLE: QUINOLINES AND METHYLQUINOLINES IN THE MAINSTREAM SMOKE  
OF COMMERCIAL CIGARETTES

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ABSTRACT: Aza-arenes in tobacco smoke are formed primarily by the thermal decomposition of proteins and other nitrogenous leaf materials. Quinoline is the most abundant aza-arene in cigarette smoke. An improved method for the qualitative and quantitative determination of isoquinoline, quinoline, and each isomeric methylquinoline in cigarette smoke will be presented. This method consists of solvent partitioning, column chromatography, and analysis by capillary gas chromatography-mass spectrometry.  $^{14}\text{C}$ -Quinoline is used as the internal standard for quantitative analyses. The mainstream smoke of several commercial cigarettes contained 0.2 to 1.3  $\mu\text{g}$  quinoline, 0.1 to 0.9  $\mu\text{g}$  isoquinoline, and 0.5 to 2.5  $\mu\text{g}$  methylquinolines per cigarette. The relative composition of the methylquinoline fraction differs greatly for the brands studied. The results on possible selective and non-selective reduction of these aza-arenes in smoke will be presented.

REVIEW: Quinoline, isoquinoline, and 2, 3, 4, 5, 6, 7 and 8 methylquinolines are pyrolysis products of nitrogen-containing components of tobacco leaf. Qualitative and quantitative determination of quinoline, isoquinoline, and methylquinolines in commercial cigarettes was done by using solvent partitioning, column chromatography and capillary gas chromatography coupled with mass spectrometry. Capillary columns used were 50-m OV-101 and 50-m Dexil 300.  $\text{C}^{14}$  labeled quinoline was used as an internal standard for quantitative determination. The following amounts of quinoline, isoquinoline and methylquinoline were detected in several commercial cigarettes:

quinoline: 167-1325 ng  
isoquinoline: 86 - 875 ng  
methylquinoline: 330-2900 ng

-Reviewed by A. Vulovic

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